#### SECTION A

# INDEX TO VOLUME 20

# Authors

Babbitt, J. D .- On the adsorption of water vapour by cellulose, 143.

Brown, W. W .- See Langstroth, G. O.

Buchanan, D.-Second genus crossed orbits, 11.

Charnley, F.—The variances of the means and the variance of the slope of the line of relation of a linear, composite, bivariate distribution, 6.

Coulthard, W. B.—Operational methods of dealing with circuits excited by sinusoidal impulses, 33.

Cullwick, E. G.—The theory of some a-c. commutator motors with series characteristics.

I. The repulsion motor, 49.

II. The Winter-Eichberg compensated repulsion motor, 83.

III. The three-phase series motor, 97.

Douglas, A. E. and Herzberg, G.—Band spectrum and structure of the CH+ molecule; identification of three interstellar lines, 71.

Dunbar, W. B .- See Young, C. R.

Herzberg, G.-See Douglas, A. E.

Langstroth, G. O. and Brown, W. W.—Absorption phenomena in a condensed spark source, 173.

Langstroth, G. O. and Newbound, K. B.—The influence of sample composition on magnesium, cadmium, and lead intensity ratios as radiated from a spark source, 39.

Newbound, K. B.-See Langstroth, G. O.

Nichols, H. J.-See Wrenshall, G. A.

Ruedy, R.—Absorption of light and heat radiation by small spherical particles. II. Scattering of light by small carbon spheres, 25.

Spinks, J. W. T .- Rotational structure of the Birge-Hopfield bands of N2, 1.

Tupper, K. F.—Note on the energy and momentum correction factors for flow in circular pipes, 195.

Wrenshall, G. A. and Nichols, H. J.—Secondary radiation from X-ray filters. I. Singlemetal filters, 185.

Young, C. R. and Dunbar, W. B.-Lateral support of steel columns and struts, 115.

# SECTION A

# INDEX TO VOLUME 20

# Subjects

- Absorption of light and heat radiation by small spherical particles. II. Scattering of light by small carbon spheres, 25.
- Absorption phenomena in a condensed spark source, 173.
- A-c. commutator motors with series characteristics, The theory of some,
  - I. The repulsion motor, 49.
  - The Winter-Eichberg compensated repulsion motor, 83.
  - III. The three-phase series motor, 97.

# Adsorption

- Heat of, of water vapour by cellulose, 152. isotherm for cellulosic materials, 145. of water vapour by cellulose, 143.
- Aluminium X-ray filter, Secondary radiation from, 185.
- Band spectrum and structure of the CH<sup>+</sup> molecule; identification of three interstellar lines, 71.
- Birge-Hopfield bands of N<sub>2</sub>, Rotational structure of, 1.
- Cadmium, magnesium, and lead intensity ratios as radiated from a spark source, Influence of sample composition on, 39.
- Carbon spheres, Small, Scattering of light by, 25.
- Cellulose, Adsorption of water vapour by, 143.
- CH<sup>+</sup> molecule, Band spectrum and structure of; identification of three interstellar lines, 71.
- Circuits excited by sinusoidal impulses, Operational methods of dealing with, 33.
- Circular pipes, See Pipes, Circular.
- Columns, Steel, and struts, Lateral support of, 115.
- Communication engineering, Operational methods of dealing with circuits excited by sinusoidal impulses, 33.

- Compensated repulsion motor, Winter-Eichberg, Theory of, 83.
- Composite, bivariate distribution, Linear, The variance of the means and the variance of the slope of the line of relation of a, 6.
- Condensed spark source, Absorption phenomena in, 173.
- Copper X-ray filter, Secondary radiation from, 185.
- Crossed orbits, Second genus, 11.
- Deslandres table of CH+ bands, 73.
- Dissociation energy of CH+, 79.
- Dissociation of polyatomic molecules by electron impacts, Ionization and, See under Polyatomic molecules.
- Distribution, Statistical, See Composite, bivariate distribution.
- Electrical current, See Circuits excited by sinusoidal impulses.
- Electrical motor(s), Theory of some

Repulsion, 49.

Three-phase series, 97.

Winter-Eichberg compensated repulsion, 83.

- Electromotive forces, See Circuits excited by sinusoidal impulses.
- Electron impacts, Ionization and dissociation of polyatomic molecules by, See under Polyatomic molecules.
- Electrons, Motion of, in "crossed orbit" model of normal helium atom, 11.
- Energy and momentum correction factors for flow in circular pipes, Note on, 195.
- Filters, X-ray, Secondary radiation from, I. Single-metal filters, 185.
- First genus orbits, 11.
- Flow in circular pipes, Note on energy and momentum correction factors for, 195.
- Heat of adsorption of water vapour by cellulose, 152.

- **Heat radiation** and light, Scattering of, by small spherical particles, 25.
- Helium atom, Second genus crossed orbits,

# Hydraulics

- Note on energy and momentum correction factors for flow in circular pipes, 195.
- Impulses, Sinusoidal, Operational methods of dealing with circuits excited by, 33.

# Industrial radiology

Secondary radiation from X-ray filters.

I. Single-metal filters, 185.

# Intensity ratios

- of line pairs in spectrum of magnesium, of mercury, and of tin, Dependence of, on amount of element in source, 173.
- Magnesium, cadmium, and lead, as radiated from a spark source, Influence of sample composition on, 39.
- Interstellar lines, Band spectrum and structure of the CH<sup>+</sup> molecule; identification of three, 71.
- Ionization and dissociation of polyatomic molecules by electron impacts, See under Polyatomic molecules.
- Ionization potential of CH, 79.
- Lateral support of steel columns and struts, 115.
- Lead, magnesium, and cadmium intensity ratios as radiated from a spark source, Influence of sample composition on, 39.
- Lead X-ray filter, Secondary radiation from, 185.
- Light, Scattering of, by small carbon spheres, 25.

#### Magnesium

- cadmium, and lead intensity ratios as radiated from a spark source, Influence of sample composition on, 39.
- Intensity ratios of line pairs in spectrum of magnesium, of mercury, and of tin, Dependence of, on amount of element in source, 173.

# Medical radiology

- Secondary radiation from X-ray filters.

  1. Single-metal filters, 185.
- Mercury, See under Spectrum.
- Molecular constants of CH+, 76.

- Motors, A-c. commutator, with series characteristics, Theory of some, 49, 83, 97.
- N<sub>2</sub>, Rotational structure of the Birge-Hopfield bands of, 1.
- Particles, Small spherical, Absorption of light and heat radiation by, 25.
- Pipes, Circular, Note on energy and momentum correction factors for flow in, 195.
- Polarization of light scattered by small carbon spheres, 31.
- Polyatomic molecules, Ionization and dissociation of, by electron impacts, Bearing of value of ionization potential of CH on 71.
- Radiation, Light and heat, Absorption of, by small spherical particles. II. Scattering of light by small carbon spheres, 25.
- Radiation, Secondary, from X-ray filters. I. Single-metal filters, 185.

#### Radiology

- Secondary radiation from X-ray filters. I. Single-metal filters, 185.
- Rectifier, Straight line, Formulae for current flowing in a circuit consisting of a condenser and a loading resistance when fed from a, 33.
- Repulsion motor, Theory of, 49.
- Rotational constants of CH+, 75.
- Rotational structure of the Birge-Hopfield bands of N<sub>1</sub>, 1.
- Scattering of light by small carbon spheres, 25.
- Secondary radiation from X-ray filters.

  I. Single-metal filters, 185.
- Second genus crossed orbits, 11, 13.
- Series motor, Three-phase, Theory of, 97.
- Sinusoidal impulses, Circuits excited by, Operational methods of dealing with, 33.

# Spark source

Condensed, Absorption phenomena in, 173.

Influence of sample composition on magnesium, cadmium, and lead intensity ratios as radiated from a, 39.

#### Spectrum

- Band, and structure of the CH+ molecule; identification of three interstellar lines, 71.
- of magnesium, cadmium, and lead, Influence of sample composition on intensity ratios as radiated from a spark source, 39.
  - of magnesium, of mercury, and of tin, Intensity ratios of line pairs in, Dependence of, on amount of element in source, 173.
- Statistics, See Composite, bivariate distribution.
- Steel columns and struts, Lateral support of, 115.
- Structural engineering, Lateral support of steel columns and struts, 115.
- Structure and band spectrum of the CH+ molecule; identification of three interstellar lines, 71.

- Struts, Steel, and columns, Lateral support of, 115.
- Three-phase series motor, Theory of, 97.
- Tin, See under Spectrum.
- Tin X-ray filter, Secondary radiation from, 185.
- Vibrational constants of CH+, 73.
- Water vapour, Adsorption of, by cellulose, 143.
- Wave forms, Complex, Method of deducing operational expressions for, 33.
- Winter-Eichberg compensated repulsion motor, Theory of, 83.
- X-ray filters, Secondary radiation from, I. Single-metal filters, 185.





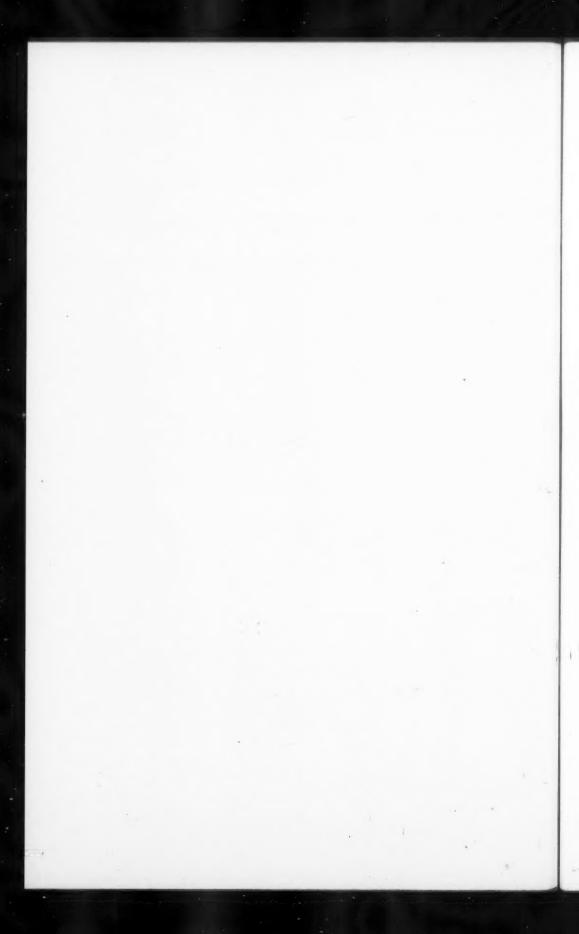
# CANADIAN JOURNAL OF RESEARCH

VOLUME 20 1942 SECTION B



Published by the

NATIONAL RESEARCH COUNCIL of CANADA



### SECTION B

# INDEX TO VOLUME 20

#### Authors

Allen, D. E .- See Collier, H. B.

Anderson, G.-See Morris, A. C.

Baril, G. H., Barré, R., and Piché, L.—Contribution à l'étude des semicarbazides δ-substituées. III. Essai d'application au dosage du glucose, 33.

Barré, R.-See Baril, G. H.

Barré, R. and Piché, L.—Contribution à l'étude des semicarbazides δ-substituées. II. Semicarbazones de quelques aldéhydes et cétones, 17.

Basterfield, S. and Dyck, A. J.—Studies in urethanes. VII. Reactions of acyl diurethanes with ammonia and primary amines. Stabilizing effect of the phenyl radical in phenylmalonyl- and phenylsuccinyl-diurethane, 240.

Bols, E. and Chubb, W. O.—The sap of the birch tree, Betula papyrifera Marsh. I. The amylase system, 114.

Bois, E., Dugal, L. C., and Lessard, M.—Le calcium et le manganèse dans les sèves et les sirops d'érable, 1.

Bols, E. and Savary, J.—Les glucidases et les glucides d'Ipomoea Batatas et de Solanum tuberosum, 195.

Chapman, R. A. and McFarlane, W. D.—Pasture studies. XXIII. A proposed modification of the fluorimetric method for the estimation of riboflavin, 82.

Chubb, W. O .- See Bois, E.

Collier, H. B. and Allen, D. E.—Enzyme inhibition by derivatives of phenothiazine. II. Inhibition of cholinesterase, 189.

III. Catalase, cytochrome oxidase, and dehydrogenases, 284.

Cuthbertson, A. C .- See McClure, J. H.

DeLong, W. A .- See MacDougall, D.

Dugal, L. C .- See Bois, E.

Dyck, A. J.-See Basterfield, S.

Eastcott, E. V. and Rae, J. J.—Factors in the culture medium that affect the phosphatase content of yeast, 202.

Evans, T. H., Levi, I., Hawkins, W. L., and Hibbert, H.—Studies on reactions relating to carbohydrates and polysaccharides. LXVII. Synthesis of methylated glucose derivatives. 175.

Graham, G. T. E. and Thorvaldson, T.—The removal of copper and cadmium in the hydrometallurgy of zinc, 93.

Greey, P. H.-See Marchant, C.

Hawkins, W. L .- See Evans, T. H.

Hendrickson, L., Hutcheon, A. T., and Spinks, J. W. T.—Aromatics in Turner Valley crudes, 231.

Hibbert, H.-See Evans, T. H.

Hopkins, C. Y.—Taste differences in compounds having the NCS linkage, 268.

Hutcheon, A. T .- See Hendrickson, L.

Kenalty, B. J.-See White, W. H.

Leger, F .- See Manske, R. H. F.

Lessard, M.-See Bois, E.

Levi, I.-See Evans, T. H.

Lucas, C. C .- See Marchant, C.

McClelland, L .- See Marchant, C.

McClure, J. H., Robertson, R. E., and Cuthbertson, A. C.—The decomposition of benzoyl peroxide in benzene, 103.

MacDougall, D. and DeLong, W. A.—Effect of initial drying temperature on the apparent lignin content of plant tissues, 40.

McFarlane, W. D.-See Chapman, R. A.

McLean, J. D., Rabinovitch, B. S., and Winkler, C. A.—The hydrolysis of propionitrile in concentrated solutions of mineral acids, 168.

Manske, R. H. F .-

The alkaloids of Fumariaceous plants

XXXI. Corydalis montana (Engelm.) Britton, 49.

XXXIII. Corydalis Cheilantheifolia Hemsl., 57.

The alkaloids of Papaveraceous plants

XXXII. Stylophorum diphyllum (Michx). Nutt., Dicranostigma franchetianum (Prain) Fedde, and Glaucium serpieri Heldr., 53.

The natural occurrence of 3-methoxy-pyridine, 265.

Manske, R. H. F.-See Marion, L.

Manske, R. H. F. and Marlon, L.—The alkaloids of Lycopodium species. I. Lycopodium complanatum L., 87.

Manske, R. H. F., Marion, L., and Leger, F.—The synthesis and the characterization of the monomethyl- and the dimethyl-quinolines, 133.

Marchant, C.—The identification of Bios V as vitamin B<sub>1</sub> and of a constituent of Bios VII solution as vitamin B<sub>6</sub>; their effect upon the reproduction of Saccharomyces hanseniaspora valbyensis, Yeast 2335, and Saccharomyces galactosus, 21.

Marchant, C., Lucas, C. C., and McClelland, L.—Chemotherapeutic studies: preparation of substituted sulphonamides—with an appendix—The determination of chemotherapeutic activity—by P. H. Greey, 5.

Marion, L.—The isolation of cicutin from Cicuta maculata L., 157.

Marion, L.-See Manske, R. H. F.

Marion, L. and Manske, R. H. F.—The alkaloids of Lycopodium species. II. Some degradation experiments with lycopodine, 153.

Montelth, G. E.-See Munro, L. A.

Morris, A. C., Munn, L. T., and Anderson, G.—The system ethanol-methanol at 40° C., 207.

Munn, L. T .- See Morris, A. C.

Munro, L. A., and Montelth, G. E.—The syneresis of silica gels containing addition agents, 212.

Pett, L. B .- See Waagen, H. K.

Piché, L.-See Baril, G. H., Barré, R.

Rabinovitch, B. S.-See McLean, J. D.

Rabinovitch, B. S. and Winkler, C. A .-

Note on the pyrolysis of methyl and ethyl cyanides, 69.

The hydrolysis of acid amides in concentrated hydrochloric acid solutions, 73.

Kinetics of the alkaline hydrolysis of propionitrile, 185.

The hydrolysis of aliphatic nitriles in concentrated hydrochloric acid solutions, 221.

Rabinovitch, B. S., Winkler, C. A., and Stewart, A. R. P.—The hydrolysis of propionitrile in concentrated hydrochloric acid solutions, 121.

Rae, J. J.-See Eastcott, E. V.

Robertson, R. E.-See McClure, J. H.

Savary, J.-See Bois, E.

Spinks, J. W. T .- See Hendrickson, L.

Stewart, A. R. P .- See Rabinovitch, B. S.

Taylor, E. G.—Studies on dicyanotrizaole. I. The conductance of dilute aqueous solutions of dicyanotriazole at 25° C., 161.

Thode, H. G. and Walkling, F. O .- Column packing and the separation of isotopes, 61.

Thorvaldson, T.-See Graham, G. T. E.

Waagen, H. K. and Pett, L. B.—The adequacy of vitamin C in Alberta diets, 246.

Some sources of vitamin C in Alberta, 274.

Walkling, F. O .- See Thode, H. G.

White, W. H., Winkler, C. A., and Kenalty, B. J.—The reaction of hydrogen atoms with isobutane, 255.

Winkler, C. A .- See McLean, J. D., Rabinovitch, B. S., White, W. H.

# SECTION B

# **INDEX TO VOLUME 20**

# Subjects

#### Acetamide

Hydrolysis of, in concentrated hydrochloric acid solutions, 73.

Thio-, Taste tests with, 270.

Acetanilide, Thio-, Taste tests with, 270.

Acetic acid, Cyano-, Hydrolysis of, in concentrated hydrochloric acid solutions, 221.

Acetone semicarbazones, as agents for determination of acetone, 18, 19.

#### Acetonitrile

Hydrolysis of, in concentrated hydrochloric acid solutions, 221. Pyrolysis of, 69.

Acid amides, Hydrolysis of, in concentrated hydrochloric acid solutions, 73.

Acriflavine, Inhibition of cholinesterase by,

Acyl diurethanes, Reactions of, with ammonia and primary amines, 240.

Alberta diets, Vitamin C in, Adequacy of, 246. Sources of, 274.

Alcohols, Effect ρf, on syneresis of silica gels, 212.

Aliphatic nitriles, See Nitriles, Aliphatic.

Alkaline hydrolysis of propionitrile, Kinetics of, 185.

Alkaloid 56 from Corydalis montana, 49.

Alkaloid F57 from Corydalis montana and C. aurea, 49.

Alkaloids L1, L2, L3, L4, L5, and L6 from Lycopodium complanatum, 87, 90, 91.

# Alkaloids of fumariaceous plants,

XXXI. Corydalis montana (Engelm.) Britton, 49.

XXXIII. Corydalis Cheilantheifolia Hemsl., 57.

# Alkaloids of lycopodium species

I. Lycopodium complanatum L., 87.

 Some degradation experiments with lycopodine, 153. Alkaloids of papaveraceous plants,

XXXII. Stylophorum diphyllum (Michx.) Nutt., Dicranostigma franchetianum (Prain) Fedde, and Glaucium serpieri Heldr., 53.

Allocryptopine from Corydalis Cheilantheifolia, 57.

Amides, Acid, Hydrolysis of, in concentrated hydrochloric acid solutions, 73.

Amines, Primary, See Aniline, Ethylamine.

d-Amino-acid oxidase, See under Enzyme inhibition.

Ammonia, Reactions of, with phenylmalonyl- and phenylsuccinyl-diurethane, 243, 244.

Amylase system in sap of birch tree, 114.

Analysis, A proposed modification of the fluorimetric method for the determination of riboflavin, 82.

Aniline, Reactions of, with phenylmalonyland phenylsuccinyl-diurethane, 243, 244.

Aromatics in Turner Valley crudes, Determination of, by specific dispersion method—benzene, toluene, xylenes, 231.

Ascorbic acid, See Vitamin C in Alberta

Aurotensine from Glaucium serpieri, 53.

Bacteriostatic activity of substituted sulphonamides, Determination of, 5, 13.

Barbituric acid, Thio-, Taste tests with, 270.

Benzaldehyde, p-Nitrophenyl-4-semicarbazone of, Melting point of, 19.

Benzamide, Hydrolysis of, in concentrated hydrochloric acid solutions, 73.

#### Benzene

Decomposition of benzoyl peroxide in, 103. See under Aromatics.

Benzenesulphonyl chloride, p-Acetylamino-, 7.

Condensation with amines, 6.

Benzidene, Bis-(acetyl-sulphanilyl)- and bis-(sulphanilyl)-, 5.

Benzoyl peroxide, Decomposition of, in benzene, 103.

Berberine from Corydalis Cheilantheifolia, 58.

Betula papyrifera (birch tree), Sap of, The amylase system of, 114.

Bios IIB, Crude, Fractionation of, into purified Bios IIB and Bios VII, 27.

Blos V, Identification of, as vitamin B<sub>1</sub>, and of a constituent of Bios VII solution as vitamin B<sub>2</sub>; their effect on the reproduction of Saccharomyces hanseniaspora valbyensis, Yeast 2335, and S. galactosus, 21.

Bios VII solution, Identification of a constituent of, as vitamin B<sub>6</sub>, 21, 29.

Effect on reproduction of yeasts, 21.

Fractionation of crude Bios IIB into purified Bios IIB and, 27.

Bios VIII, Experiments with, 31.

Birch tree, Sap of, The amylase system of, 114,

**Buffers,** Effect of buffering of the growth medium on the phosphatase content of yeast, 202.

Cadmium and copper, Removal of, in the hydrometallurgy of zinc, 93.

Calcium in maple saps and sugars, 1.

I-Canadine from Corydalis Cheilantheifolia, 57.

Capauridine from Corydalis montana, 49.

Capaurimine from Corydalis montana, 49.

Capaurine from Corydalis montana, 49.

Carbohydrates and polysaccharides, Studies on reactions relating to, LXVII. Synthesis of methylated glucose derivatives. 175.

Catalase, See under Enzyme inhibition.

Cellobiogenic amylase in birch sap, 114.

Celloblose in birch sap, 114.

I-Chellanthifoline from Corydalis Cheilantheifolia, 57.

Chelidonine from Stylophorum diphyllum and Dicranostigma franchetianum, 53.

Chemical exchange, Comparison of various types of column packing on, 66.

Chemotherapeutic activity, Determination of, 13.

Chemotherapy, Studies in, Preparation of substituted sulphonamides, 5.

Cholinesterase, See under Enzyme inhibition.

Cicuta maculata, Isolation of cicutin from, 157.

#### Cicutin

Hydrolytic methylation of, 160. Isolation of, from Cicuta maculata, 157.

# Column packing(s)

and chemical exchange, 66.

Comparison of, in distillation of hydrocarbons and of water systems, 63. and the separation of isotopes, 61.

Complanatine, (L1), an alkaloid from Lycopodium complanatum, 87, 89.

Conductance of dilute aqueous solutions of dicyanotriazole at 25° C., 161.

Copper, Removal of, in the hydrometallurgy of zinc, 93.

Corydaline from Corydalis montana, 49.

Corydalis aurea, Alkaloid F57 from, 49.

Corydalis Chellantheifolia, Alkaloids from, 57.

I-Corypalmine from Corydalis Cheilantheifolia, 57.

Culture media, Factors in, that affect the phosphatase content of yeast, 202.

Cyclohexylamine, Reaction of, with malonyl-diurethane, 245.

Cytochrome oxidase, See under Enzyme inhibition.

Dehydrogenase, See Succinic and Yeast lactic dehydrogenases under Enzyme inhibition.

Dehydrogenation of lycopodine with selenium, 153.

Dicranostigma franchetianum, Alkaloids from, 53.

Diets, Alberta, See Alberta diets.

Dispersion method for determination of aromatics in presence of paraffinic and naphthenic hydrocarbons, 231.

#### Distillation

Column packing and the separation of isotopes, 61.

Comparison of types of column packing, 63. on chemical exchange, 66.

# Drying of plant tissues,

Effect of initial drying temperature on apparent lignin content of, 40.

Enzyme inhibition by phenothiazine derivatives, 284.

d-Amino-acid oxidase by phenothiazone, 289.

Catalase by

leucophenothiazone, 285. phenothiazine sulphoxide, 285.

Cholinesterase by acriflavine, 192. eserine, 192.

methylene blue, 191.

phenothiazine methyl-sulphonium perchlorate, 191.

phenothiazone, 191.

Cytochrome oxidase by leucophenothiazone and thionol, 288.

Succinic dehydrogenase by oxidized form of phenothiazone, 284.

Succinic oxidase by phenothiazone. 287. thionol. 287.

Urease and yeast lactic dehydrogenase by phenothiazone, 289.

#### Enzymes

Glucidases in Ipomoea Batatas and Solanum tuberosum, 195.

Equisetum arvense, 3-Methoxy-pyridine from, 366.

Erythritol Effect of, on syneresis of silica gels, 212.

Eserine, Inhibition of cholinesterase by, 190.

Ethanol-methanol system, at 40° C., 207.

# Ethyl alcohol

Effect of, on syncresis of silica gels, 212. See Ethanol.

Ethylamine, Reactions of, with phenyl-malonyl- and phenylsuccinyl-diurethane, 243, 244.

Ethyl cyanide, Pyrolysis of, Note on, 69.

Fluorimetric method for the estimation of riboflavin, proposed modification of, 82.

Foodstuffs, A proposed modification of the fluorimetric method for the estimation of riboflavin in, 82.

Formamide, Hydrolysis of, in concentrated hydrochloric acid solutions, 73.

Fractionating columns, Study of an expanded shale aggregate packing material for, 61.

Fumariaceous plants, Alkaloids of, 49, 57.

# Fungi

Yeast(s)

Factors in culture medium that affect the phosphatase content of, 202. See under Bios V.

Gels, Silica, containing addition agents, syneresis of, 212.

Glaucine from Glaucium serpieri, 53.

Glaucium serpieri, Alkaloids from, 53.

Glucidases of Ipomoea Batatas and Solanum tuberosum, 195.

Glucides of Ipomoea Batatas and Solanum tuberosum, 195.

Glucogenic amylase in birch sap, 114.

Gluconic acid, 2:3-Dimethyl-, 179.

Gluconophenylhydrazide, 2,3- Dimethyl-, 179.

#### Glucose

Application of p-nitrophenyl-4-semicarbazide to determination of, 33. derivatives, Methylated, 175. in sap of birch tree, 114.

semicarbazones as agents for the determination of glucose, 18, 19.

# Glucose

2, 3-Dimethyl-, 175, 181.

2, 3, 4, 6-Tetramethyl-, 175, 182. Tribenzoyl-2, 3-dimethyl-, 181.

2, 3, 4-Trimethyl-, 175, 182.

#### Glucoside(s)

4,6-Benzylidene-α- and β-methyl, 178, 180. Dibenzoyl-2,3-dimethyl-β-methyl, 181.

2,3-Dimethyl-4,6-benzylidene-α- and β-methyl, 178, 180.

2,3-Dimethyl- $\alpha$ - and  $\beta$ -methyl-, 178, 180. Tetra-acetyl- $\beta$ -methyl, 176, 180.

2,3,4,6-Tetramethyl-α-methyl, 182.

2,3,4-Trimethyl- $\alpha$ - and  $\beta$ -methyl, 175, 182.

Glycerol, Effect of, on syneresis of silica gels, 212.

Glycol, Effect of, on syneresis of silica gels, 212.

Glyoxylic acid, p-Nitrophenyl-4-semicarbazone of, Melting point, 19.

Hydrobromic acid, Concentrated, Hydrolysis of propionitrile in, 168.

# Hydrocarbons

Distillation of, in a column containing expanded shale aggregate packing, 61.

Paraffinic and naphthenic, Dispersion method for determination of aromatics in presence of, 231.

See also under names of individual hydrocarbons.

# Hydrochloric acid solutions, concentrated,

Hydrolysis in, of acid amides, 73. aliphatic nitriles, 221. propionitrile, 121.

Hydrocyanic acid, Hydrolysis of, in concentrated hydrochloric acid solutions, 221.

Hydrogen atoms, Reaction of, with isobutane, 255.

# Hydrogen ion concentration,

Effect of, in precipitation of copper and cadmium in hydrometallurgy of zinc, 93.

of growth medium, Effect of, on phosphatase content of yeast, 203.

and syneresis of silica gels containing addition agents, Relation of, 217.

#### Hydrolysis of

N<sup>4</sup>-acetyl-N<sup>1</sup>-substituted sulphanilamides, 5.

acid amides in concentrated hydrochloric acid solutions, 73.

aliphatic nitriles in concentrated hydrochloric acid solutions, 221.

propronitrile in concentrated mineral acids, 121, 168; in sodium hydroxide, 185.

starch; by birch sap, 115; by juice of Ipomoea Batatas and Solanum tuberosum, 195.

Hydrometallurgy of zinc, Removal of copper and cadmium in, 93.

Inhibition of cholinesterase by derivatives of phenothiazine, 189.

Ipomoea Batatas, Glucidases and glucides of, 195.

Isobutane, Reaction of hydrogen atoms with, 255.

Isocorydine from Glaucium serpieri, 53.

Isodithiocyanic acid, Taste tests with, 270.

Isotopes, Column packing and the separation of, 61.

#### Kinetics of

alkaline hydrolysis of propionitrile, 185. decomposition of benzoyl peroxide in benzene, 103. See under Hydrolysis.

Lactic dehydrogenase, Yeast, See under Enzyme inhibition.

Lepidine, Preparation of, 149.

Levoglucosan, 2, 3, 4-Trimethyl-, 181.

**Lignin** content of plant tissues, Apparent, Effect of initial drying temperature on, 40.

#### Lycopodine

degradation with selenium, 154. dehydrogenation of, with palladium, 155. Isolation of 7-methyl- and 5:7-dimethylquinoline from, 154.

from lycopodium complanatum, 87. Reaction with phthalic anhydride, 155.

Lycopodium species, Alkaloids of, 87, 153.

Magnesium in growth medium, Effect of, on phosphatase content of yeast, 204, 205.

Manganese in maple saps and sugars, 1.

Maple saps and sugars, Calcium and manganese in, 1.

Metallurgy, Hydro-, of zinc. Removal of copper and cadmium in, 93.

Methanol-ethanol system at 40°C., 207.

# Methyl alcohol

Effect of, on syneresis of silica gels, 212. See Methanol.

Methyl cyanide, Pyrolysis of, Note on, 69.

Methylene blue, Inhibition of cholinesterase by, 191.

NCS linkage, Taste differences in compounds having the, 268.

# Nicotine from

Equisetum arvense, 87, 92. Lycopodium complanatum, 87, 92.

Nitric acid, Concentrated, Hydrolysis of propionitrile in, 168.

Nitriles, Aliphatic, Hydrolysis of, in concentrated hydrochloric acid solutions, 221.

m-Nitrobenzaldehyde, p-Nitrophenyl-4semicarbazone of, Melting point, 19.

Nitrogen-carbon-sulphur linkage, Taste differences in compounds having the, 268.

#### Nutrition

Adequacy of vitamin C in Alberta diets. 246

Some sources of vitamin C in Alberta, 274.

Obscurine, (L6), an alkaloid from Lycopodium complanatum, 87, 91.

Ophiocarpine, Oxidation of, 60.

Oxazolidine derivatives, Taste tests with, 268

2-Thion-4, 4-dimethyl-, 269. Preparation, 273.

2-Thion-5, 5-dimethyl-, 269.

2-Thion-5-methyl-, 269. Preparation, 272.

Oxidase, See d-Amino-acid, cytochrome, and succinic oxidases under Enzyme inhibi-

Oxidation of ophiocarpine, 60.

Packing, Column, See Column packing.

Palladium, Dehydrogenation of lycopodine with, 155.

Palmatine, Tetrahydro-dl- from Corydalis montana, 49.

Papaveraceous plants, Alkaloids of, 53.

XXIII. A proposed modification of the fluorimetric method for the estimation of riboflavin, 82.

Petroleum, Aromatics in Turner Valley crudes, determination of, by specific dispersion method, 231.

Phenothiazine derivatives, Enzyme inhibition by

II. Inhibition of cholinesterase, 189. III. Catalase, cytochrome oxidase, and dehydrogenases. 284.

See under Enzyme inhibition.

p-Phenylene - diamine, Bis - (acetyl-sul-phanilyl) - and bis-(sulphanilyl) -, 5.

Phenyl radical, Stabilizing effect of, in phenylmalonyl- and phenyl-succinyldiurethane, 240.

Phosphatase content of yeast, Factors in the culture medium that affect the, 202.

Phosphate in growth medium, Effect of, on phosphatase content of yeast, 204, 205.

Phthalic anhydride, Reaction with lyco-podine, 155.

Physostigmine, See Eserine.

Plant tissues, Effect of initial drying temperature on the apparent lignin content Polysaccharides, Studies on carbohydrates and, 175.

Potato, See Ipomoea Batatas and Solanum tuberosum.

Pressure(s) Total and partial, of system ethanol-methanol at 40° C., 209.

Propane, 2-Methyl-, Reaction of hydrogen atoms with, 255.

Propene,  $\gamma, \gamma, \gamma$ - Trichloro- $\alpha$ -(3-methyl-quinolyl)-, 145.

Propionamide, Hydrolysis of, in concentrated hydrochloric acid solutions, 73.

Propionitrile, Hydrolysis of,

in concentrated solutions of hydrochloric acid, 121.

in hydrobromic, nitric, and sulphuric acids, 168.

Kinetics of alkaline, 185.

# Protopine from

Corydalis Cheilantheifolia, 57.

Corydalis montana, 49.

Dicranostigma franchetianum, 53.

Glaucium serpieri, 53.

Stylophorum diphyllum, 53.

# Pyridine, 3-Methoxy-,

from Thermopsis rhombifolia and Equisetum arvense, 265.

Synthesis, 267.

Pyrolysis of methyl and ethyl cyanides, Note on, 69.

Pyruvic acid, p-Nitrophenyl-4-semicarba-zone of, Melting point, 19.

# Quinaldine, 142.

# **Ouinoline**

8-amino-2: 5-dimethyl-, 143.

8-amino-3: 5-dimethyl-, 146.

8-amino-4: 5-dimethyl-, 151.

8-amino-5: 6-dimethyl-, 141.

8-amino-5-methyl-, 139.

2:3-, 2:4-dimethyl-, 144; 2:5-dimethyl-, 142; 2:6-, 2:7-, 2:8-dimethyl-, 143. 3:4-dimethyl-, 145; 3:5-, 3:6-, 3:7-dimethyl, 146; 3:8-dimethyl-, 148.

4:5-, 4:6-, 4:7-, 4:8-dimethyl-, 150.

5:6-dimethyl-, 142.

5:7-dimethyl-, 140.

production in degradation of lycopodine, 154.

5:8-dimethyl-, 140.

6:7-dimethyl-, 141; 6:8-dimethyl-, 142.

7:8-dimethyl-, 142.

7-ethyl-, 139.

# Quinoline-concluded

2-hydroxy-8-methoxy-4:5-dimethyl-, 150.

2-methyl-, 142.

3-methyl-, 144.

4-methyl-, 149.

5-methyl-, 139.

6-methyl-, 140.

7-methyl-, 140.

production in degradation of lycopodine, 154.

8-methyl-, 140.

3-methyl-6-bromo-, 149.

8-nitro-2: 5-dimethyl-, 143.

8-nitro-3: 5-dimethyl-, 145.

8-nitro-4: 5-dimethyl-, 151.

8-nitro-5: 6-dimethyl-, 141.

8-nitro-5-methyl-, 139.

2:3:6-, 2:3:8-trimethyl-, 144.

3:4:7-trimethyl-, 148.

See also Propene, γ-γ-γ-Trichloro-α-(3-methyl-4-quinolyl)-.

Quinolines, Preparation and characterization of monomethyl- and dimethyl-, 133.

#### Reaction kinetics

of the hydrolysis of

acid amides in concentrated hydrochloric acid, 73.

aliphatic amines in concentrated hydrochloric acid, 221.

propionitrile in concentrated mineral acids, 168, 121.

of reaction of hydrogen atoms with isobutane.

See also Kinetics.

Refractive Index, Specific dispersion method for determination of aromatics in presence of paraffinic and naphthenic hydrocarbons, 231.

Riboflavin, Estimation of, A proposed modification for the, 82.

Saccharomyces galactosus, See under Bios V.

Saccharomyces hanseniaspora valbyensis, See under Bios V.

#### Sap

of birch tree. I. The amylase system, 114.

Maple, and syrup, Calcium and magnesium in, 1.

Scoulerine from Corydalis montana, 49.

Selenium, Dehydrogenation of lycopodine with, 153. Semicarbazides, δ-Substituted, Contribution to the study of,

 Semicarbazones of some aldehydes and ketones, 17.

III. Application to determination of glucose, 33.

Semicarbazide(s), δ-Substituted, as agents for identification and determination of aldehydes and ketones (acetone and glucose), 17.

Benzyl-4-, 17.

p-Bromophenyl-4-, 17.

o, p-Dinitrophenyl-4-, 17.

Diphenyl-4-4-, 17.

p-Nitrophenyl-4-, 17.

application to determination of glucose, 33.

p-Nitroxenyl-4-, 17.

Phenyl-4-, 17.

Xanthyl-4-, 17.

p-Xenyl-4-, 17.

Semicarbazones, as agents for determination of aldehydes and ketones, 18, 19, 33. See also Semicarbazides.

#### Shale aggregate packing

Analysis of, 62.

for fractionating columns, 61.

Silica gels containing addition agents. Syneresis of, 212.

Sodium hydroxide, Kinetics of hydrolysis of propionitrile in, 185.

Solanum tuberosum, Glucidases and glucides of, 195.

Specific dispersion method for determining aromatics in presence of paraffinic and naphthenic hydrocarbons, 231.

Starch, Hydrolysis of,

by birch sap, 115.

by juice of Ipomoea Batatas and Solanum tuberosum, 195.

Stylophorum diphyllum, Alkaloids from. 53.

# Stylopine from

Corydalis Cheilantheifolia, 58.

Dicranostigma franchetianum, 55.

Stylophorum diphyllum, 55.

Succinic dehydrogenase and oxidase, See under Enzyme inhibition.

Sulphanilamides, Substituted, 5.

### Sulphanilamide(s)

N4-acetyl-N1-substituted, 5.

N1-substituted, 5.

N1-(4-acetylphenyl), 5. N1-(2-aminophenyl), 5, 12. N1-(3-aminophenyl), 5. N1-(4-aminophenyl), 5. N1-(4-arsonophenyl), 5. N1-(4-benzoylphenyl), 5. N¹-(4-bromophenyl), 5. N¹-(2-carbethoxyphenyl), 5. N1-(3-carbethoxyphenyl), 5. N1-(4-carbethoxyphenyl), 5. N1-(2-carboxyphenyl), 5 N1-(3-carboxyphenyl), 5. N'-(4-carboxyphenyl), 5, 10.
N'-(4-carboxyphenyl), 5, 10.
N'-(2, 4-dimethylphenyl), 5.
N'-(6-dimethylphenyl), 5.
N'-(6-hydroxyethyl), 5. N¹-(4-methoxy-2-aminophenyl), 5. N¹-(6-methoxy-3-aminophenyl), 5, 11. N'-(2-methoxy-5-methylphenyl), 5. N'-(4-methoxy-2-nitrophenyl), 5. N'-(6-methoxy-3-nitrophenyl), 5. N1-(2-methoxyphenyl), 5. N'-(3-methoxyphenyl), 5. N'-(4-methoxyphenyl), 5, 9. N'-(4-methyl-3-aminophenyl), 5. N'-(6-methyl-3-aminophenyl), 5.

N¹-(2-methyl-5-isopropylphenyl), 5. N¹-(4-methyl-3-nitrophenyl), 5.

N¹-(6-methyl-3-nitrophenyl), 5. N¹-(2-methylphenyl), 5.

N¹-(2-methylphenyl), 5. N¹-(4-methylphenyl), 5. N¹-(2-nitrophenyl), 5. N<sup>1</sup>-(3-nitrophenyl), 5. N<sup>1</sup>-(4-nitrophenyl), 5.

Sulphur compounds, Taste tests with, 268.

Sulphuric acid, Concentrated, Hydrolysis of propionitrile in, 168.

Syneresis of silica gels containing addition agents, 212.

System ethanol-methanol at 40° C., 207.

Taste differences in compounds having the NCS linkage, 268.

# Temperature,

Initial drying, effect of, on apparent lignin content of plant tissues, 40.

Thermopsis rhombifolia, 3-Methoxy-pyridine from, 266.

Thiazine methyl sulphonium ion, Inhibition of cholinesterase by, 192.

Thiazolidine derivatives, taste tests with,

2-Thion-, 269. 2-Thion-5, 5-dimethyl-, 269.

2-Thion-5-methyl-, 269. Preparation, 272.

Thiazoline derivatives, Preparation and taste tests with.

2-Oxo-4, 5-dimethyl-, 269, 272. 2-Oxo-4-methyl-, 269, 273. 2-Oxo-4-methyl-5-bromo-, 269. 2-Thion-4, 5-dimethyl-, 269, 272.

oluene, See under Aromatics.

p-Toluylene-diamine, phanilyl)- and bis-(sulphanilyl)-, 5, 11. Bis-(acetyl-sul-

Triazole, Dicyano-, Studies on,

I. The conductance of dilute aqueous solutions of dicyanotriazole, at 25° C.,

Turner Valley crudes, Aromatics in, Determination of, by dispersion methodbenzene, toluene, xylenes, 231.

Urea, Allylthio- and phenylthio-, Taste tests with, 270.

Irease, See under Enzyme inhibition.

Urethanes, Studies in,

VII. Reactions of acyl diurethanes with ammonia and primary amines. Stabilizing effect of the phenyl radical in phenylmalonyl- and phenylsuccinyl-diurethane, 240.

Urethane(s) Di-,

Malonyl-, Reaction of, with cyclohexyl-amine, 245.

Phenylmalonyl- and phenylsuccinyl-, Re-actions with ammonia, aniline, and ethylamine, 240.

Vanillin, p-Nitrophenyl-4-semicarbazone of, melting point, 19.

Vitamin B<sub>1</sub>, See under Bios V.

Vitamin B. See under Bios VII.

Vitamin C in Alberta diets

Adequacy of, 246. Sources of, 274.

Water systems, Distillation of, in a column containing an expanded shale aggregate packing material, 61.

Xylenes, See under Aromatics.

Yeast(s), See Fungi, and under Enzyme inhibition.

Zinc, Removal of copper and cadmium in the hydrometallurgy of, 93.

# **ERRATUM**

Page 246, line 1 of footnote 1, for "August 28" read "August 3".

